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THE CLEAN AIR ACT AND THE CONSTITUTION

LISA HEINZERLING*

On February 27, 2001, the Supreme Court unanimously upheld the Clean Air Act against a constitutional challenge based on the nondelegation doctrine. The Court held that the Act provided the requisite “intelligible principle” for assignments of authority to the executive, and it also held that the D.C. Circuit had erred in allowing an administrative agency to decide the scope of its own authority under what that court had held was an impermissibly broad assignment of authority. This article was written before the Supreme Court issued its decision.

The National Ambient Air Quality Standards (NAAQS) form the centerpiece of what many consider to be this country’s single most important environmental program. These standards protect public health by governing the quality of the outdoor air throughout the nation. They address the pollutants—sulfur oxides, nitrogen oxides, lead, carbon monoxide, ozone, and particulate matter—that are among the best-studied, most pervasive, and most diversely harmful of the by-products of industrial society. A large part of the federal regulation that takes place under the Clean Air Act, and most of the state regulation, has as its objective the attainment of air quality consistent with the NAAQS.

The Clean Air Act’s NAAQS program is one of the signal success stories of American environmental law. Emissions of most of the pollutants regulated by the program have dramatically decreased in the thirty years that the program has been in place, despite substantial increases in the size of our population and in the amount of economic activity.¹ In a recent peer-reviewed, retrospective study of the Clean Air Act’s first twenty years, the EPA

* Professor of Law, Georgetown University Law Center; Counsel of Record for the Commonwealth of Massachusetts and the State of New Jersey, *Whitman v. American Trucking Ass’n*s. I am grateful to Richard Lazarus and David Vladeck exceedingly helpful comments, and to Scott Thomasson and Hannah Stott-Bumsted for superb research assistance on the briefs I filed on behalf of Massachusetts and New Jersey in *American Trucking*. This article draws heavily on those briefs.

1. See RICHARD N.L. ANDREWS, *MANAGING THE ENVIRONMENT, MANAGING OURSELVES—A HISTORY OF AMERICAN ENVIRONMENTAL POLICY* 280 (Yale Univ. 1999) (citing U.S. COUNCIL ON ENVIRONMENTAL QUALITY, *ENVIRONMENTAL QUALITY: 25TH ANNUAL REPORT—1994-95*, 179, 182 (1997)).

concluded that the Act had produced almost 22 *trillion* dollars more in benefits than it had imposed in costs, and EPA believed that even this dazzling amount probably understated the benefits of the statute.² A widely cited survey of EPA managers conducted in the late 1980's concluded that the air pollution addressed by the NAAQS program should be placed *first* on a list of environmental problems ranked according to the risks they posed to human health, welfare, and ecosystems.³

In the summer of 1997, the Environmental Protection Agency (EPA) strengthened the air quality standards for two air pollutants, particulate matter and ozone, based on mounting scientific evidence of the harmfulness of these pollutants at levels allowed by the existing standards.⁴ With respect to particulate matter (PM), the agency found that numerous epidemiological studies had established an association between PM levels and premature deaths in humans, especially in the elderly population. Indeed, one study on which the EPA relied had found that approximately 60,000 premature deaths in the United States alone could be attributed, annually, to particulate matter.⁵ The scientific evidence on PM, however, did not all point in one direction, nor did it establish a causal theory as to why PM would cause death.⁶

As for ozone, EPA responded to a substantial and growing body of scientific evidence linking ozone levels and the initiation and aggravation of respiratory problems, including asthma in children. This evidence, too, posed its share of challenges; in particular, the existing evidence seemed to point to the possibility that there is no level at which ozone exerts no effect whatsoever on the human body.⁷ That is, it is possible that ozone has some physiological effect, albeit perhaps a harmless one, on some person or group of persons at every level above zero.

The standards promulgated based on this body of scientific evidence were exceedingly complex. In setting new air quality standards for PM and ozone, EPA established not only an appropriate level for these pollutants in the ambient air, but also an averaging time, a statistical "form" (used to measure

2. ENVIRONMENTAL PROTECTION AGENCY [hereinafter EPA], OFFICE OF AIR AND RADIATION, THE BENEFITS AND COSTS OF THE CLEAN AIR ACT, 1970 TO 1990 ES-8 (Oct. 1997). This report focused almost exclusively on the consequences of regulating the criteria air pollutants. *Id.*

3. EPA, UNFINISHED BUSINESS: A COMPARATIVE ASSESSMENT OF ENVIRONMENTAL PRIORITIES 58 (1987).

4. National Ambient Air Quality Standards for Particulate Matter, 62 Fed. Reg. 38,652 (1997) (to be codified at 40 C.F.R. pt. 50) [hereinafter Final PM Rule]; National Ambient Air Quality Standards for Ozone, 62 Fed. Reg. 38,856 (1997) (to be codified at 40 C.F.R. pt. 50) [hereinafter Final Ozone Rule].

5. For an early press account of this research, see *Particles in Air Help Kill 60,000 a Year, Study Says*, NY TIMES, May 13, 1991, at A13.

6. See Final PM Rule, *supra* note 4.

7. See Final Ozone Rule, *supra* note 4, at 38,863.

compliance with the standards), and, for particulate matter, an indicator (based on the size of particles to be regulated). The resulting “suite” of standards for PM and ozone, as EPA referred to them, thus consisted of a complex matrix of factors relating to air quality.

A phalanx of industry groups challenged EPA’s new air quality standards. Most of the claims raised by industry involved garden-variety administrative law issues related to the adequacy of EPA’s explanations for its decisions under garden-variety administrative law standards of review. In a brief passage, however, industry parties (and one set of amici) suggested that EPA’s implementation of the Clean Air Act involved so much discretion on the part of the agency that it violated the constitutional principle of nondelegation.

Given the summary treatment of this issue by the parties, and more fundamentally, given the moribund status of the nondelegation doctrine in constitutional law, it came as a surprise when the nondelegation doctrine became the primary focus of the D.C. Circuit’s ultimate ruling. Even more surprisingly, the court used the doctrine to hold that the Clean Air Act’s provisions relating to national air quality standards, and EPA’s longstanding interpretation of those provisions, were unconstitutional. The court explained that “EPA appears to have articulated no ‘intelligible principle’ to channel its application of the[] factors [it uses in setting NAAQS]; nor is one apparent from the statute.”⁸

The D.C. Circuit came to this arresting conclusion based not on a review of the Clean Air Act itself, but based instead on a review of EPA’s 1997 rulemakings on PM and ozone. The court found the agency’s explanations for its rules constitutionally deficient because they did not identify a “stopping point” for regulation. Although the court agreed that the factors EPA considers in setting the margin of safety for the NAAQS—such as the nature and severity of health effects, the size of the affected population, and the kind of health information available and the uncertainties surrounding it—were reasonable, it concluded that these factors “do not themselves speak to the issue of degree.” Indeed, the court hypothesized, under the agency’s interpretation of the Clean Air Act, the agency would be free to set air quality standards at any level ranging from zero to the levels experienced during London’s “killer fog”—a severe pollution episode in 1952 in which, it is estimated, 4,000 people died over a period of one week.⁹

The court remanded the case to EPA. The court acknowledged that allowing EPA to correct the constitutional defect the court had discerned in the statute would not satisfy what the court called a “key function of non-delegation doctrine,” which is to ensure that Congress, not the agency,

8. *Am. Trucking Ass’ns v. EPA*, 175 F.3d 1027, 1034 (D.C. Cir. 1998).

9. *Id.* at 1037.

exercises legislative authority. Indeed, the court conceded that, under its approach, “[t]he agency will make the fundamental policy choices.”¹⁰

The court concluded its constitutional analysis by hinting at the kinds of standards that might pass constitutional muster. The court acknowledged that what appeared to be its first choice—cost-benefit analysis—was not open to EPA given the court’s precedents interpreting the Clean Air Act to forbid EPA to consider costs in setting the NAAQS.¹¹ Alternatively, the court proposed that EPA develop a “generic unit of harm that takes into account population affected, severity and probability.”¹² More specifically, the court endorsed setting environmental standards according to their effect on “quality-adjusted life-years,” although it conceded that the Department of Health and Human Services had determined that a similar approach utilized by Oregon in the health-care context violated the Americans with Disabilities Act.¹³

Each of these features of the court’s opinion—the court’s focus on what the agency did rather than what the statute says, its choice of remand rather than reversal as a remedy, and its requirement of a quantitative metastandard to govern NAAQS rulemakings—was misguided as a matter of both constitutional precedent and sound regulatory policy. Other scholars have ably explained why the court’s decision to remand rather than reverse, thus leaving the agency itself to impose limits on its own discretion, was an awkward outcome to embrace in the name of the nondelegation doctrine.¹⁴ In this article, I will focus on the problematic nature of the court of appeals’ dismissal of the relevant statutory framework and its requirement of a quantitative metastandard to govern agency rulemakings. I begin, however, by suggesting a somewhat more mundane reason for disputing the court’s decision: the decision rested on a simple factual error, a misunderstanding of the nature of nonthreshold pollutants.

I. THE “PROBLEM” OF “NONTRESHOLD” POLLUTANTS

In a crucial passage, the D.C. Circuit offered this prelude to its conclusion on the constitutionality of the Clean Air Act’s NAAQS program:

EPA regards ozone definitely, and PM likely, as nonthreshold pollutants, i.e., ones that have some possibility of some adverse health impact (however slight) at any exposure level above zero. See Ozone Final Rule, 62 Fed. Reg. at 38,863/3 (“Nor does it seem possible, in the Administrator’s judgment, to

10. *Id.* at 1038.

11. *Id.* at 1038; *see also* *Lead Industries Ass’n v. EPA*, 647 F.2d 1130, 1148 (D.C. Cir. 1980).

12. *Am. Trucking*, 175 F.3d at 1039.

13. *Id.* at 1039 n.5.

14. *See, e.g.*, Cass R. Sunstein, *Is the Clean Air Act Unconstitutional?*, 98 MICH. L. REV. 303, 350-51 (1999); Robert W. Adler, *American Trucking and the Revival (?) of the Nondelegation Doctrine*, 30 ENVTL. L. REP. 10233, 10241-44 (2000).

identify [an ozone concentration] level at which it can be concluded with confidence that no ‘adverse’ effects are likely to occur.”); National Ambient Air Quality Standards for Ozone and Particulate Matter, 61 Fed. Reg. 65,637, 65,651/3 (1996) (proposed rule) (“The single most important factor influencing the uncertainty associated with the risk estimates is whether or not a threshold concentration exists below which PM-associated health risks are not likely to occur.”). For convenience, we refer to both as non-threshold pollutants; the indeterminacy of PM’s status does not affect EPA’s analysis, or ours.

Thus the only concentration for ozone and PM that is utterly risk-free, in the sense of direct health impacts, is zero.¹⁵

The court went on to assert, in a much-quoted passage, that “EPA’s formulation of its policy judgment leaves it free to pick any point between zero and a hair below the concentrations yielding London’s Killer Fog.”¹⁶

In their briefs in the Supreme Court, industry groups latched onto the issue of health-effects thresholds and made it the centerpiece of their argument against EPA’s PM and ozone rules. Because of the alleged “nonthreshold” status of PM and ozone, they asserted, any NAAQS set above zero for these pollutants must perforce be arbitrary (unless EPA considered economic costs in setting that standard).¹⁷

The arguments of the D.C. Circuit and industry groups based on the “nonthreshold” character of PM and ozone betray a deep misunderstanding of the concept of a nonthreshold pollutant. As a consequence, both the court and the industry parties before the Supreme Court seriously misrepresented EPA’s degree of authority under the Clean Air Act.

The court and industry parties implicitly embraced a conception of nonthreshold pollutants as pollutants that *have* been shown *not* to have a threshold, that is, pollutants that have been shown to have adverse effects on human health or the environment at every nonzero level. This is not EPA’s conception of the scientific evidence regarding PM and ozone.

When EPA discussed the possibility that particulate matter and ozone are nonthreshold pollutants, the agency was referring to the fact that these pollutants have *not* been shown to *have* a threshold, that is, it has not been demonstrated that these pollutants cease to have adverse effects on human health or the environment below a certain level. EPA never claimed to have proven that PM and ozone have adverse effects on human health at every nonzero level.¹⁸ Thus, when EPA discussed the possibility that these are

15. *Am. Trucking*, 175 F.3d at 1034.

16. *Id.* at 1037.

17. See, e.g., Brief of Cross-Petitioners Am. Trucking Ass’ns at 25-6, *Am. Trucking Ass’ns v. Browner*, 120 S. Ct. 2193 (2000) (No. 99-1426).

18. See Final Ozone Rule, *supra* note 4, at 38,856, 38,863; see also NAAQS Final PM Rule, *supra* note 4, at 38,652, 38,674-75.

“nonthreshold” pollutants, it was referring to a *lack* of evidence that there *is* a threshold.

This *lack* of evidence would not be sufficient to support a NAAQS. The Clean Air Act requires the Administrator to present evidence of harm before she may set or revise the NAAQS. She may not set the NAAQS based on the *lack* of evidence of *no* harm. Section 108(a)(2) makes this point plain: the criteria on which the NAAQS are to be based must describe “all *identifiable* effects on public health or welfare.”¹⁹ Indeed, if EPA were allowed to set the NAAQS based on the lack of evidence of no harm, there would be no need to develop criteria documents at all, because EPA would not be required to show health effects before regulating. In such a regime, it would presumably be up to the regulated community to show the harmlessness of air pollution, rather than being up to the government to show its harmfulness. This is not the regulatory regime created by the Clean Air Act.²⁰

As a consequence, the D.C. Circuit’s and industry parties’ suggestion that EPA is required or even empowered to set pollutant levels at zero when faced with a nonthreshold pollutant is mistaken. EPA is not required to set the NAAQS at zero for such pollutants because nonthreshold pollutants are not what the D.C. Circuit and industry groups claimed them to be; they are not pollutants that have been shown to be harmful at all nonzero levels, they are pollutants that have not been shown to be harmless at all nonzero levels. Indeed, if EPA did indeed attempt to set a NAAQS based on the lack of evidence of harmlessness rather than based on affirmative evidence of harmfulness, I expect that the industry groups that challenged EPA’s PM and ozone rules would be first in line to attack the agency’s decision.

In sum, in the PM and ozone rulemaking proceedings at issue in *American Trucking*, EPA’s observation that particulate matter and ozone may be “nonthreshold” pollutants was nothing more than an admission that the agency had not proven the existence of a level at which these pollutants had no effects on human health. It was not a claim that the agency had shown that these pollutants *do* have effects on human health at every concentration level above zero. It was also not a claim that the agency would regard all such effects on health, if detected, to be sufficiently “adverse” to warrant a regulatory response.²¹ Nor was it a claim that the agency would regard all such effects to be effects on *public* health within the meaning of the Clean Air Act.²² Thus,

19. 42 U.S.C. § 7408(a)(2) (2000) (emphasis added).

20. In contrast, in *Indus. Union Dept., AFL-CIO v. Am. Petroleum Inst.*, 448 U.S. 607 (1980) [hereinafter *Benzene*] the Court addressed the Occupational Safety and Health Administration’s “cancer policy,” which presumed that no safe level of carcinogenic substances existed and required workplace standards to be set based on this presumption. *Id.* at 624. EPA has never adopted this kind of presumption in setting the NAAQS.

21. See S. REP. NO. 91-1196 at 10 (2nd Sess. 1970).

22. 42 U.S.C. § 7409(b)(1) (2000).

even where a safe level (a “threshold”) for a pollutant has not been proven, EPA still may, nonarbitrarily, set the NAAQS for that pollutant based on the agency’s judgment with respect to such factors as uncertainties surrounding the evidence of health effects, the adverse nature of the detectable effects, and the size of the population affected. And indeed that is exactly the process EPA has followed in thirty years of regulation under the NAAQS program.

II. THE CLEAN AIR ACT AND THE NONDELEGATION DOCTRINE

The Supreme Court has long instructed that nondelegation claims are to be evaluated by consulting the language, purpose, and history of the statutory provision under consideration.²³ The D.C. Circuit skipped over this crucial step. As explained below, had the court not done so, it would have found that the Act fits comfortably within the range of statutes long upheld by the Court against nondelegation attacks. Moreover, if one considers the history of the development of the NAAQS program in Congress, one sees that the Clean Air Act embodies the kind of dialogue and collaboration between Congress and the executive that celebrates rather than denigrates the principles animating the nondelegation doctrine.

A. *Standard Nondelegation Analysis*

The Clean Air Act is plainly constitutional under the Supreme Court’s existing precedents. The Act places numerous significant constraints on EPA’s discretion in setting the NAAQS: it prescribes the factors EPA may and may not consider; requires a margin of safety as an antidote to scientific uncertainty; limits the range of pollutants regulated by the NAAQS program; limits the life span of each NAAQS; and imposes large procedural constraints on EPA’s decisionmaking, including an intensive process of scientific review. Congress has thus made the most basic and important decisions that arise in setting air quality standards; at every important decision-point in the process of setting air quality standards, EPA’s discretion is constrained by a choice Congress has made. With its multiple substantive constraints on the actions of a federal agency, its limited jurisdictional reach, and its abundant procedural protections, the Clean Air Act is clearly constitutional.

Substantive constraints. The Clean Air Act places numerous substantive constraints on EPA’s decisions setting the NAAQS. First of all, the Act constrains EPA’s discretion by excluding some factors from EPA’s consideration. In setting the NAAQS, EPA may consider only the effects of the relevant air pollutant on human health and welfare.²⁴ As EPA has recognized since it issued the very first NAAQS thirty years ago, it may not

23. See, e.g., *Am. Power & Light Co. v. SEC*, 329 U.S. 90, 104 (1946).

24. See 42 U.S.C. § 7409(b)(1) (NAAQS to be “based on” air quality criteria); 42 U.S.C. § 7408(a)(2) (criteria to describe scientific information on health and welfare effects of pollutants).

consider economic and technological feasibility in setting the NAAQS.²⁵ In excluding the consideration of costs and technology and focusing only on human health and welfare, Congress squarely confronted the most difficult and most basic choice a decisionmaker faces when devising environmental standards—whether the government should trade off human lives and health for dollars—and firmly answered “no.”²⁶

Second, the Act also sets forth the factors EPA *must* consider in establishing the NAAQS. NAAQS must be “based on” the air quality criteria,²⁷ which, in turn, must be based on “the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of such pollutant in the ambient air”²⁸ Virtually every one of the words in the quoted passage significantly constrains EPA’s discretion.

EPA must base the NAAQS on *the latest scientific knowledge*—not on outdated information, not on nonscientific data. EPA must be cognizant of *all identifiable effects* on public health and welfare. Yet the agency must also bear in mind the *kind and extent* of these effects—which is another way of saying that EPA should distinguish among effects based on their severity and magnitude.

In addition, the statute’s emphasis on *public* health directs EPA’s attention to populations rather than individuals, thus precluding EPA from setting a NAAQS in order to protect a single individual from harm. In this way, the Clean Air Act is very different from the Occupational Safety and Health Act, at issue in *Benzene*. That statute aspires to achieve workplaces in which “*no employee*” suffers a “material impairment of health or functional capacity” from toxic materials or harmful physical agents.²⁹ In *Benzene*, a plurality of Justices thus worried that the statute might allow the government to require large expenditures based on “the mere possibility that some employee somewhere in the country may confront some risk of cancer.”³⁰ Such a “possibility” is simply not the basis for regulation under the Clean Air Act.

In so prescribing the range of findings EPA must make and the range of factors it must consider, the Clean Air Act is a close cousin to the statutes the Supreme Court has recently upheld against nondelegation challenges.³¹

25. See 36 Fed. Reg. 8186 (1971) (explaining that EPA did not consider comments concerning feasibility because “the Clean Air Act, as amended, does not permit any factors other than health to be taken into account in setting the primary standards”).

26. *Benzene*, 448 U.S. at 672 U.S. at 672 (Rehnquist, J., concurring).

27. 42 U.S.C. § 7409(b)(1).

28. 42 U.S.C. § 7408(a)(2).

29. *Benzene*, 448 U.S. at 612 (emphasis added).

30. *Id.* at 652.

31. See *Touby v. United States*, 500 U.S. 160, 166-67 (1991); *Skinner v. Mid-Am. Pipeline Co.*, 490 U.S. 212, 219-20 (1989); *Mistretta v. United States*, 488 U.S. 361, 375-77 (1989).

The Clean Air Act not only tells EPA what to consider in setting the NAAQS, it also gives the agency a great deal of guidance as to the ultimate content of the standards. First, EPA must set the primary NAAQS at a level which is “requisite to protect the public health.”³² The use of the term “requisite” limits EPA’s standard-setting discretion on both the low and high ends; it implies a degree of necessity for the standards and yet also forbids the Administrator to set standards inadequate to protect the public health.

In addition, EPA must allow “an adequate margin of safety” in setting the primary NAAQS.³³ The requirement of a margin of safety prescribes a particular approach toward scientific uncertainty for EPA; where the science is uncertain, it tells EPA to lean toward the more stringent end of the range of alternative standards rather than toward the less stringent end.

Finally, the NAAQS for any given pollutant must be uniform throughout the country.³⁴ The question whether to permit variations in the national air quality standards³⁵—to account for differing regional or local conditions in weather, population densities, and so forth—is a public policy issue of the highest order. Congress squarely addressed that issue and decided against nonuniform standards. In this way as well, the Clean Air Act resembles the statute upheld against a nondelegation challenge in *Skinner v. Mid-America Pipeline Co.*, which precluded a case-by-case determination of the governing rules and opted instead for a uniform rule.³⁶

Jurisdictional limits. The NAAQS apply to only a limited subset of air pollutants—widespread pollutants (i.e., those from “numerous and diverse sources”) that endanger public health or welfare.³⁷ Indeed, since 1978, as noted above, the NAAQS program has been limited to only *six* air pollutants, out of the many hundreds of such pollutants that exist today.³⁸ Thus, as in *United States v. Rock Royal Co-op, Inc.*,³⁹ for example, the territory over which the executive’s discretion may range is extremely limited.⁴⁰

Indeed, in *Loving v. United States*, 517 U.S. 748 (1996), the Court concluded that the federal statute giving the President authority to define the aggravating factors that permit a court-martial to impose the death penalty need not give *any* guidance to the executive in order to survive a nondelegation challenge. *See id.* at 772-73.

32. 42 U.S.C. § 7409(b)(1).

33. *Id.*

34. *See* 42 U.S.C. § 7409(a)(1).

35. States are free, of course, to set stricter standards, 42 U.S.C. § 7416 (2000), but the *national* standards must be uniform.

36. *See Skinner*, 490 U.S. at 219.

37. 42 U.S.C. § 7408(a)(1).

38. The Clean Air Act’s program addressing toxic air pollutants, for example, covers approximately 180 different pollutants. *See* 42 U.S.C. § 7412(b)(1).

39. *United States v. Rock Royal Co-op, Inc.*, 307 U.S. 533 (1939).

40. *See id.* at 576 (authorizing Secretary of Agriculture to issue orders with respect to only certain kinds of agricultural commodities).

The reach of any given NAAQS is limited as well. EPA must review every NAAQS, and the criteria on which the NAAQS are based, every five years.⁴¹ This requirement has caused EPA to undertake numerous reviews and revisions of the criteria and NAAQS.⁴² Indeed, the NAAQS at issue here grew out of EPA's obligatory review of the criteria documents for PM and ozone. EPA's continuing obligation to revisit the criteria and NAAQS means that the life span of any given NAAQS is limited to the period in which the scientific data on which it is based remains reliable.

In the latter respect, the Clean Air Act is more restrictive than some congressional assignments of authority the Court has upheld. In *Field v. Clark*,⁴³ the Court affirmed Congress's authority to assign to the President the task of suspending free trade in certain commodities, under certain conditions, "for such time as he shall deem just."⁴⁴ The Court concluded that the President "had no discretion in the premises except in respect to the duration of the suspension so ordered," and that this discretion "related only to the enforcement of the policy established by Congress."⁴⁵ In limiting the duration of any one decision on the NAAQS, therefore, the Clean Air Act is more restrictive than the statute upheld in *Field*.

Procedural requirements. The Clean Air Act also contains numerous procedural requirements that further limit the Administrator's actions. First of all, the Act requires EPA to develop and rely on the criteria document. In providing that the original NAAQS were to be based on the criteria documents the Department of Health, Education, and Welfare (HEW) had compiled as of 1970,⁴⁶ the Act guides EPA's development of the criteria on which the NAAQS depend. As discussed in the next section, HEW's criteria considered only scientific information on pollutants' effects on health and welfare; looked carefully at effects on especially vulnerable subpopulations; and candidly acknowledged the uncertainties attendant upon predicting the adverse effects of air pollution. Congress's endorsement of HEW's criteria documents thus provides substantial guidance to EPA in its development of such documents.

Second, the Act also requires EPA to consult with the Clean Air Scientific Advisory Committee (CASAC) in formulating the criteria and in shaping NAAQS in light of the criteria. The Administrator may significantly depart from CASAC's recommendations only if she explains why she has done so.⁴⁷ In this case, when CASAC was able to achieve a scientific consensus, the Administrator's actions hewed closely to it. In setting the ozone standard, for

41. See 42 U.S.C. § 7409(d)(1).

42. See EPA, *supra* note 3.

43. *Field v. Clark*, 143 U.S. 649 (1892).

44. *Id.* at 680 (emphasis added).

45. *Id.* at 693.

46. 42 U.S.C. §§ 7409(a), (b).

47. 42 U.S.C. § 7607(d)(3).

example, the Administrator considered ozone levels only within a range approved by CASAC and declined to set the standard at the lowest end of that range in part because no member of CASAC had endorsed such a low standard.⁴⁸

Third, the Administrator's actions are subject to the exacting requirements of the Administrative Procedure Act and judicial review for arbitrariness. The Court has suggested that procedural requirements and the availability of judicial review are important factors in evaluating the propriety of Congress's assignments of authority to the executive branch.⁴⁹

Containing as it does these manifold constraints on the substance, scope, and process of the NAAQS program, the Clean Air Act compares extremely favorably to the assignments of authority from Congress to the executive that the Court has upheld, many of which have left large and basic questions for the agency to address.⁵⁰

Furthermore, the Clean Air Act is a world away from the only statute the Court has ever invalidated under the delegation doctrine. In two cases decided in 1935, the Court invalidated two separate provisions of the National Industrial Recovery Act of 1933. In *A.L.A. Schechter Poultry Corp. v. United States*,⁵¹ the Court zeroed in on the delegation of lawmaking authority to

48. Final Ozone Rule, *supra* note 4, at 38,861, 38,868.

49. See *Am. Power & Light Co.*, 329 U.S. at 105; *Touby*, 500 U.S. at 168-69. In addition, the administrative official—the Administrator of the EPA—to whom authority is granted is “clearly specified,” and is a politically accountable official of “high governmental authority.” *Lichter v. United States*, 334 U.S. 742, 787 (1948). Furthermore, because the Administrator is charged not only with setting the NAAQS but also with ensuring their implementation by the states, CAA §§ 110, 179, 42 U.S.C. §§ 7410, 7509 (2000), and because the NAAQS themselves contain elements—such as their “form”—that partake of both lawmaking and executive functions, this case does not present a situation in which the entity to whom authority has been assigned exercises nothing but the lawmaking function. Cf. *Mistretta*, 488 U.S. at 417 (Scalia, J., dissenting).

50. In addition to the cases already mentioned, see, for example, *Buttfield v. Stranahan*, 192 U.S. 470 (1904); *OPP Cotton Mills v. Administrator Wage & Hour Div., Dept. of Labor*, 312 U.S. 126 (1941); *Yakus v. United States*, 321 U.S. 414 (1944). As Justice Scalia has aptly observed:

By no means can the environmental laws be considered among those conferring the greatest amount of discretion upon the agencies. In fact, they are probably among those conferring the least. Not only is general policy not left to be disposed of by the agencies under the general standards of “public interest, convenience and necessity,” but in some areas even cost-benefit analysis is excluded. For example, national primary ambient air quality standards are to be established not in light of what is “feasible” or “reasonable” (a formulation that would enable counterbalancing costs to be offset against the benefit of clean air) but rather on the sole basis of what is “requisite to protect the public health.”

Antonin Scalia, *Responsibilities of Regulatory Agencies Under Environmental Laws*, 24 HOUS. L. REV. 97, 102 (1987) (citing CAA § 109(b), 42 U.S.C. § 7409(b)).

51. 295 U.S. 495 (1935).

private groups in invalidating section 3 of the statute,⁵² and in *Panama Refining Co. v. Ryan*,⁵³ the Court fixed on the lack of any operative rule in invalidating a criminal conviction under section 9 of the statute.⁵⁴ Neither of these extreme circumstances is presented by the Clean Air Act.

The Clean Air Act clearly lays down the “intelligible principle” that the Court has required of assignments of authority from Congress to the executive. Moreover, given that EPA has always interpreted the Act in a way that heeds all of these constraints on its own discretion, the EPA’s *interpretation* of the Act is likewise clearly constitutional.

B. Nonstandard Nondelegation Analysis: The Relevance of Dialogue and Collaboration

According to the Court, the delegation doctrine “has developed to prevent Congress from forsaking its duties.”⁵⁵ It is thus highly relevant that Congress has, from the beginning, kept an exceedingly close eye on the development of air quality criteria and standards and has frequently altered statutory requirements in response to agency decisions and experience. Far from abdicating its legislative role, Congress has actively shaped the contours of the federal program protecting air quality. Indeed, as I explain below, all of the constraints discussed in the preceding section were forged in Congress based on an ongoing dialogue with the executive agency charged with implementing the Clean Air Act.

The Clean Air Act today embodies no fewer than eleven separate Acts of Congress, stretching back almost 50 years.⁵⁶ These five decades of federal air pollution law have witnessed an extraordinary collaboration between Congress and the agencies that have been charged with implementing Congress’s commands. In the historical development of the Clean Air Act, one can observe a decades-long dialogue between Congress and the executive about the scope and content of federal air pollution policy. This collaboration and dialogue has led to numerous extremely precise and significant refinements in the statutory language relating to air quality criteria and standards, refinements that reflect the congressional response to the executive’s experiences in grappling with the problem of air pollution.

Congress’s effort to address the problem of air pollution began in 1955. The first federal law on air pollution authorized the Surgeon General to conduct studies on the consequences and prevention of air pollution and

52. *Id.* at 521-25.

53. 293 U.S. 388 (1935).

54. *Id.* at 412-13. *See also* *Clinton v. City of New York*, 524 U.S. 417, 486 (1998) (Breyer, J., dissenting) (noting distinctive facts of both cases).

55. *Loving*, 517 U.S. at 758.

56. *See* 1 WILLIAM H. RODGERS, ENVIRONMENTAL LAW 124 (2d ed. 1994).

provided funding for this research.⁵⁷ Reflecting Congress's conviction at the time that air pollution was a matter for states and local governments to address, a primary purpose of the research was to help these entities attack air pollution problems on their own.⁵⁸ To this day, a primary aim of the Clean Air Act is to promote research into the causes and consequences of air pollution; indeed, vestiges of the 1955 statute can be found in today's Clean Air Act.⁵⁹

The early federal legislation reflected the growing awareness that air pollution posed a serious threat to the population's health and welfare. Severe air pollution episodes in Donora, Pennsylvania, in 1948, in London in 1952, and in New York City in 1953 had together caused the deaths of thousands of people.⁶⁰ A study of the Donora episode performed by the United States Public Health Service provided the first definitive evidence of the acute health effects of air pollution.⁶¹ Studies performed in the 1950s also began to establish a causal link between automotive exhausts and smog.⁶² In 1960, Congress responded to these early findings by passing the Schenck Act, calling for further research into the consequences for health and welfare of motor vehicle exhaust.⁶³ Thus the early years of federal air pollution legislation witnessed a consistent pattern: preliminary research showed a threat from air pollution; this research was followed by critiques and counter-research; and the eventual result was typically research confirming the existence of a threat. This pattern – the pattern, in fact, of scientific inquiry—is a recurring, indeed defining, feature of air pollution control.

The 1960s witnessed the federal government's steadily increasing involvement in addressing air pollution. In 1963, Congress enacted the original Clean Air Act.⁶⁴ This statute for the first time authorized the federal government—acting through the Secretary of the Department of Health, Education, and Welfare (HEW)—to establish “criteria” for air quality.⁶⁵ The language describing the scope and content of the original air quality criteria

57. See Air Pollution Control Act of 1955, Pub. L. No. 84-159, 69 Stat. 322 (codified as amended at 42 U.S.C. § 7409).

58. See *id.*

59. Compare 69 Stat. 322(3), with 42 U.S.C. § 7403(a)(3) (authorizing Surgeon General and EPA, respectively, to conduct research and make recommendations at the request of state and local agencies).

60. See STAFF OF SENATE COMM. ON PUBLIC WORKS, 88th Cong., 1st Sess., A STUDY OF POLLUTION –AIR 13 (Comm. Print 1963).

61. See H.H. SCHRENK, U.S. PUBLIC HEALTH SERVICE, AIR POLLUTION IN DONORA, PA. 1 (1949).

62. *Air Pollution Problems: Hearings Before the House Select Comm. on Small Business*, 84th Cong., 42 (1956) (statement of Arie J. Haagen-Smit, Cal. Inst. of Tech.).

63. See Act of June 8, 1960, Pub. L. No. 86-493, 74 Stat. 162 (1960).

64. See Clean Air Act of 1963, Pub. L. No. 88-206, 77 Stat. 392.

65. *Id.*

was strikingly similar to the corresponding language of the Clean Air Act today.⁶⁶

The Clean Air Act of 1963 also directed the Secretary to gather and publish information on air pollution control techniques.⁶⁷ The criteria and the information on control techniques were to be made available to state, local, and interstate air pollution control agencies,⁶⁸ and the Secretary was directed to help these agencies develop their own standards to control air pollution.⁶⁹ Somewhat confusingly, Congress used the same term, "criteria," for both the scientific *information* on the consequences of air pollution and *standards* for air quality.⁷⁰ But the basic goal of the standards was clear enough and has persisted to this day: the Secretary was to recommend to local, state, or interstate air pollution control agencies those standards which "in [the Secretary's] judgment may be necessary to protect the public health and welfare."⁷¹

The Clean Air Act of 1963 thus introduced some of the broad outlines of federal air pollution policy as it exists today. However, the statute did not set deadlines for HEW's establishment of air quality criteria; it encouraged but did not require the establishment of air quality standards by states and local governments; and it provided new but cumbersome and limited mechanisms for the control of interstate air pollution.⁷² Thus, it is not surprising that little happened under the Clean Air Act of 1963: HEW published air quality criteria for only one set of air pollutants, sulfur oxides,⁷³ and the enforcement mechanisms created by the Act proved inadequate.⁷⁴

In 1967, Congress acted again.⁷⁵ In the Air Quality Act of 1967, Congress directed the Secretary of HEW to establish air quality criteria that were to

66. The statute provided:

Whenever [the Secretary] determines that there is a particular air pollution agent (or combination of agents), present in the air in certain quantities, producing effects harmful to the health or welfare of persons, the Secretary shall compile and publish criteria reflecting accurately the latest scientific knowledge useful in indicating the kind and extent of such effects which may be expected from the presence of such air pollutant agent (or combination of agents) in the air in varying quantities. 42 U.S.C. § 7408(a)(2).

67. See §§ 3(a)(1), 3(b)(8), 77 Stat. at 394-95.

68. See § 3(c)(2), 77 Stat. at 395.

69. See §§ 2(a), 3(a)(2), 3(b), 77 Stat. at 393-95.

70. See § 3(c)(3), 77 Stat. at 395.

71. See § 3(c)(3), 77 Stat. at 395.

72. See § 3(c)(2)-(3), 5, 77 Stat. at 395-99.

73. See PUBLIC HEALTH SERVICE, HEW, PUB. NO. 1619, AIR QUALITY CRITERIA FOR SULFUR OXIDES xxix (1967) [hereinafter 1967 SO_x Criteria Doc.].

74. See Rodgers, *supra* note 56, at 130.

75. Congress also had, two years before, passed amendments to the Clean Air Act which, for the first time, directed the Secretary to set emissions standards for motor vehicles. See Motor Vehicle Air Pollution Control Act of 1965, Pub. L. No. 89-272, § 202, 79 Stat. 992 (1965).

reflect “the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on health and welfare which may be expected from the presence of an air pollution agent, or combination of agents in the ambient air, in varying quantities.”⁷⁶ In developing the criteria, the Secretary was directed to consult with “appropriate advisory committees and Federal departments and agencies.”⁷⁷ In light of this new requirement, the Secretary was told to reevaluate the only criteria document he had issued so far (on sulfur oxides).⁷⁸ The 1967 Act also introduced part of the language that now governs the NAAQS themselves: the Act directed the Secretary to issue “such criteria of air quality as in his judgment may be requisite for the protection of the public health and welfare.”⁷⁹

Congress continued to rely largely on the states for the development of air quality *standards* (rules governing air quality) as opposed to *criteria* (the scientific documents on which the standards were to depend). But in the 1967 Act, Congress created an important exception to this rule: if a state did not establish air quality standards for air pollutants for which the Secretary had issued criteria or if a state established standards which were not “consistent with” the Secretary’s criteria, the Secretary himself was required to promulgate air quality standards for that state.⁸⁰

Once again, however, the statute did not obligate HEW to act by a certain date, nor did it obligate the states to act at all. And, once again, progress under the statute was disappointing. By late 1969, HEW had issued criteria for only two pollutants;⁸¹ fewer than half of the states had set air quality standards for sulfur oxides;⁸² and no state air quality standard had been approved by HEW.⁸³ In addition, the enforcement mechanisms of the 1967 Act, aimed at interstate

76. Air Quality Act of 1967, Pub. L. No. 90-148, § 107(b)(2), 81 Stat. 491 (1967). The 1967 Act also continued to require the Secretary to develop and disseminate information on control techniques. For the first time, Congress required that this information include information on technological and economic feasibility. See § 107(c), 81 Stat. at 491.

77. § 107(b)(1), 81 Stat. at 491.

78. See *id.*

79. *Id.*

80. § 107(c)(2).

81. See 1967 SO_x Criteria Doc., *supra* note 73; see also NATIONAL AIR POLLUTION CONTROL ADMINISTRATION (NAPCA), HEW, PUB. NO. AP-49, AIR QUALITY CRITERIA FOR PARTICULATE MATTER iv (1969) [hereinafter 1969 PM Criteria Doc.].

82. See SECRETARY OF HEALTH, EDUCATION, AND WELFARE, PROGRESS IN THE PREVENTION AND CONTROL OF AIR POLLUTION, S. DOC. NO. 91-64, at 16-18; see also *Air Pollution – 1970: Hearings Before the Subcomm. on Air and Water Pollution of the Senate Comm. on Public Works*, 91st Cong. (March 17, 1970) (app. – pt. 1) [hereinafter March 17 Hearing].

83. See March 17 Hearing, *supra* note 82, at app. – pt. 1.

air pollution, lay almost entirely dormant.⁸⁴ By the time HEW issued criteria for three more air pollutants in early 1970,⁸⁵ Congress was already at work on new legislation.

The Clean Air Amendments of 1970 reflected a fundamental break with the past in several respects. The most obvious change was institutional: for the first time, Congress required the federal government to set standards for air quality even in the absence of a finding of inadequacy with respect to any state standards. The states retained the task of implementing the air quality standards, but EPA—created during Congress's deliberations on the 1970 Amendments⁸⁶—was directed to set the standards.⁸⁷

Also for the first time, Congress limited the category of air pollutants to which the air quality standards would apply. The 1970 Amendments provided that the standards would be set only for pollutants listed by EPA, and that EPA would list a pollutant only if it “has an adverse effect on public health or welfare” and comes from “numerous or diverse” sources.⁸⁸

With respect to the air quality *criteria*, Congress required for the first time that the criteria describe effects on “*public* health and welfare.” Previously, it had required that criteria describe effects on the health and welfare “of persons”⁸⁹ or simply on “health and welfare.”⁹⁰ Indeed, the original Senate version of the 1970 amendments referred to the “health of persons,” but the House version—referring to “public health or welfare”—prevailed.⁹¹ Tellingly, at the same time, Congress endorsed the same shift in emphasis with respect to mobile source emission standards: whereas, in 1965, Congress had called for mobile source emissions standards whenever air pollutants endangered the “health or welfare of any persons,” in 1970, Congress required

84. See S. DOC. NO. 91-64, *supra* note 82, at 24-25; see also March 17 Hearing, *supra* note 82, at app. – pt. 1.

85. See NAPCA, HEW, PUB. NO. AP-62, AIR QUALITY CRITERIA FOR CARBON MONOXIDE 10-7 (1970) [hereinafter 1970 CO Criteria Doc.]; NAPCA, HEW, PUB. NO. AP-64, AIR QUALITY CRITERIA FOR PHOTOCHEMICAL OXIDANTS 1-1 (1970) [hereinafter 1970 Ozone Criteria Doc.]; U.S. DEP'T OF HEALTH, EDUCATION, & WELFARE, AIR QUALITY CRITERIA FOR HYDROCARBONS 1-1 (1970) [hereinafter 1970 HC Criteria Doc.].

86. See Reorg. Plan No. 3 of 1970, 5 U.S.C.A. App. (Supp. 1996).

87. See Clean Air Amendments of 1970, Pub. L. No. 91-604, § 109, § 4(a), 84 Stat. 1679. States are free, however, to set air quality standards that are stricter than the federal standards. 42 U.S.C. § 7416.

88. § 108, § 4(a), 84 Stat. at 1678.

89. Clean Air Act of 1963, Pub. L. No. 88-206, § 3(c)(2), 77 Stat. 392, 395.

90. Air Quality Act of 1967, Pub. L. No. 90-148, § 107(b)(1), § 2, 81 Stat. 491.

91. Compare H.R. 17255, 91st Cong. § 2(a) (1970) (requiring air quality standards to be set for pollutants that “endanger or may endanger the public health or welfare”) with H.R. 17255, 91st Cong. § 10(a)(3) (1970) (providing that air quality standards are those the attainment and maintenance of which are “necessary to protect the health of persons”).

such standards only when the “public health or welfare” was at risk.⁹² By targeting public health, Congress instructed EPA to target health effects in *populations* rather than in single individuals.⁹³

Congress also made two significant adjustments to the substance of the air quality *standards*. Although Congress had previously directed HEW to encourage states and local governments to set uniform standards,⁹⁴ it had never required uniformity. This changed in 1970: Congress required EPA’s new air quality standards to be *nationally uniform*.⁹⁵

The 1970 Amendments also stated for the first time that the air quality standards protecting human health—the primary standards⁹⁶—must embody “an adequate margin of safety.”⁹⁷ The requirement of a margin of safety followed directly from HEW’s experience in developing its first criteria documents.

HEW’s research regarding the first criteria pollutants had revealed several important features (and limits) of scientific inquiry into the effects of air pollution on human health and welfare. First of all, HEW’s review of the scientific literature on the criteria pollutants had revealed a diverse array of harms which occurred at a diverse array of pollution levels.⁹⁸ The effects on human health alone, HEW had discovered, varied widely, including such disparate effects as the initiation and/or aggravation of respiratory diseases

92. Compare Motor Vehicle Air Pollution Control Act of 1965, Pub. L. No. 89-272, § 202(a), § 6, 79 Stat. 992, with Clean Air Act Amendments of 1970, Pub. L. No. 91-604, § 202(a)(1), § 6, 84 Stat. 1690.

93. The Senate Report stated that NAAQS must “protect the health of any group of the population,” including sensitive groups for which “reference should be made to a representative sample of persons comprising the sensitive group rather than to a single person in the group.” S. REP. No. 91-1196, at 10 (2d Sess. 1970).

94. See Clean Air Act of 1963, Pub. L. No. 88-206, § 2(a), 77 Stat. 393.

95. See Clean Air Amendments of 1970, Pub. L. No. 91-604, §109(a)(1), § 4(a), 84 Stat. 1679 (directing Administrator to publish “a” primary NAAQS and “a” secondary NAAQS for each criteria pollutant).

96. The creation of two categories of standards – primary and secondary – was another innovation of the 1970 Amendments. *Id.* §109, § 4(a), 84 Stat. at 1679-80.

97. *Id.* § 109(b)(1), § 4(a), 84 Stat. at 1679.

98. See 1967 SO_x Criteria Doc., *supra* note 73, at 1iii (graphic depiction of results of studies concerning health and welfare effects of sulfur oxides); see 1969 PM Criteria Document, *supra* note 81, at 188-89 (summary of health effects at various exposure levels); see 1970 CO Criteria Doc., *supra* note 85, at 10-7 (table reflecting health effects at various exposure levels); 1970 Ozone Criteria Doc., *supra* note 85, at 10-9 to 10-13 (text and table detailing health and welfare effects associated with different levels of exposure).

including bronchitis⁹⁹ and asthma,¹⁰⁰ impairment of the oxygen-carrying capacity of the blood,¹⁰¹ and premature death.¹⁰²

Second, HEW's research had revealed no bright-line pollutant level above which adverse effects on human health and welfare were certain to occur and below which such effects did not occur. Identifying a bright line above which adverse effects would certainly occur proved difficult because much of the research on air pollution studied the effects of pollutants in combination rather than in isolation; thus, in developing the criteria for sulfur oxides, for example, HEW acknowledged the possibility that the health effects it found were due to the combination of sulfur oxides and other pollutants rather than to sulfur oxides alone.¹⁰³ Inconsistencies among scientific studies,¹⁰⁴ and shortcomings in the studies' methodologies,¹⁰⁵ created further difficulties.¹⁰⁶

At the same time, HEW had little confidence that the lowest levels at which adverse effects had been detected in the scientific literature were in fact the lowest levels at which such effects occurred.¹⁰⁷ Equally important, HEW had discovered that part of the reason why it was difficult or impossible to identify a single "safe" level of pollution was that different people responded differently to air pollution. HEW's research had revealed that certain subpopulations—including the elderly¹⁰⁸ and people with preexisting

99. AIR POLLUTION CONTROL OFFICE, EPA, PUB. NO. AP-84, AIR QUALITY CRITERIA FOR NITROGEN OXIDES 11-8 (1971) [hereinafter 1971 NO_x Criteria Doc.].

100. See 1970 Ozone Criteria Doc., *supra* note 85, at 10-7.

101. *Id.* at 10-3.

102. See 1967 SO_x Criteria Doc., *supra* note 73, at xxix.

103. *Id.* at v-vi.

104. See 1970 Ozone Criteria Doc., *supra* note 85, at 10-7, 10-8.

105. 1969 PM Criteria Doc., *supra* note 81, at 183 (failure to control for smoking habits).

106. HEW also encountered challenges simply in measuring exposure levels. See, e.g., 1970 Ozone Criteria Doc., *supra* note 85, at 10-1, 10-2.

107. In its 1969 guidelines on developing air quality criteria, HEW explained:

The exposure levels which have thus far been associated with identifiable effects . . . are not necessarily the lowest levels of exposure that will produce such effects. Nor are those effects necessarily the only ones produced by such exposures. Knowledge of the synergistic effects of air pollutants is limited. So is knowledge of possible long-term genetic effects. . . . In short, air quality criteria cannot be interpreted as threshold values; indeed, for many types of air pollutants, there may not be a threshold of risk to health and the environment. In the evaluation of biological effects of environmental contaminants, whether in the community or occupational environment, accumulating evidence has almost invariably shown that adverse effects can and do occur at exposure levels that at one time were considered "safe."

NAPCA, HEW, GUIDELINES FOR THE DEVELOPMENT OF AIR QUALITY STANDARDS AND IMPLEMENTATION PLANS 16 (1969).

108. See 1970 Ozone Criteria Doc., *supra* note 85, at 10-7.

cardiovascular or respiratory disease¹⁰⁹—were most susceptible to the adverse effects of air pollution.¹¹⁰ In the first criteria document on particulate matter, HEW observed that many effects on sensitive subpopulations would not be picked up by epidemiological research because the sample sizes were often too small.¹¹¹

HEW responded to these challenges by endorsing an approach to standard-setting that leaned in favor of more rather than less stringent standards. In every criteria document published after 1967,¹¹² HEW closed with a recommendation to the following effect:

It is reasonable and prudent to conclude that, when promulgating ambient air quality standards, consideration should be given to requirements for margins of safety which take into account long-term effects on health and materials occurring below the above levels.¹¹³

This recommendation was directed at the local, state, and interstate agencies which were, at that time, responsible for setting air quality standards.¹¹⁴

The 1970 Amendments dealt with the challenges HEW had encountered in two ways. First, as noted, the Amendments required for the first time a

109. See 1967 SO_x Criteria Doc., *supra* note 73, at xxviii; 1969 PM Criteria Doc., *supra* note 81, at 188 (aggravation of bronchitis); 1970 Ozone Criteria Doc., *supra* note 85, at 10-7 (aggravation of asthma); 1970 CO Criteria Doc., *supra* note 85, at 10-4.

110. Congress also had reason to believe that children comprised a subpopulation that might be especially sensitive to air pollution. In his floor statement introducing the 1970 Amendments, Senator Muskie referred to a study concerning the health effects of nitrogen dioxide on children. 116 CONG. REC. 32,913 (1970).

111. See 1969 PM Criteria Doc., *supra* note 81, at 188.

112. The hydrocarbons criteria document did not offer this recommendation because HEW found that hydrocarbons cause no direct health effects by themselves; they cause adverse effects only by interacting with other pollutants to form ozone. 1970 HC Criteria Doc., *supra* note 85, at 8-5.

113. 1969 PM Criteria Doc., *supra* note 81, at 189; see also 1970 Ozone Criteria Doc., *supra* note 85, at 10-13; 1970 CO Criteria Doc., *supra* note 85, at 10-6; 1971 NO_x Criteria Doc., *supra* note 99, at 11-12.

114. Congress was well aware of HEW's practice of recommending margins of safety for air quality standards. In a Senate hearing during the crafting of the 1970 amendments, the head of the HEW unit responsible for developing air quality criteria and standards noted HEW's practice of including a margin of safety in its recommendations, claiming that the margin of safety corrected for the fact that "the no-effect level always corresponds . . . to the limitations of scientific knowledge in this area." *Air Pollution—1970: Hearings Before the Subcomm. on Air and Water Pollution of the Senate Comm. on Public Works*, 91st Cong., 2d Sess. (May 27, 1970) (statement of Dr. John T. Middleton, Commissioner, National Air Pollution Control Administration, HEW).

“margin of safety” in air quality standards, thus accepting the recommendation HEW had made in its criteria documents.¹¹⁵

Second, Congress endorsed the criteria documents HEW had so far compiled. Congress did not require HEW to reevaluate any existing criteria, as it had done in 1967 with respect to the sulfur oxides criteria. Moreover, not only did Congress require air quality standards to be “based on” the criteria rather than merely “consistent with” them,¹¹⁶ it also required EPA to *base the very first NAAQS on HEW’s existing criteria*.¹¹⁷ These facts signal a congressional endorsement of HEW’s basic approach in the criteria documents compiled as of 1970—an approach which featured inquiry only into the consequences for health and welfare of pollutants in the ambient air; close attention to the effects of air pollution on sensitive segments of the population;¹¹⁸ and knowing recognition of the difficulties of drawing a bright line between pollution that is harmful and pollution that is not.

Congress substantially revised the Clean Air Act again in 1977, making three important adjustments to the NAAQS-setting process. First, Congress added the requirement that the criteria and the NAAQS be reviewed and, if appropriate, revised every five years.¹¹⁹ Second, Congress required EPA to create and to consult with CASAC.¹²⁰ Finally, Congress altered the requirements for determining which pollutants were subject to the NAAQS program: whereas in 1970 Congress had specified that the program applied to a pollutant if it “*has an adverse effect on public health or welfare*,”¹²¹ in 1977 it provided that the program applied to a pollutant if it “*may reasonably be*

115. The Senate report on the legislation explained that “margins of safety are essential to any health-related environmental standards if a reasonable degree of protection is to be provided against hazards which research has not yet identified.” S. REP. NO. 91-1196, at 10.

116. *Compare* Air Quality Act of 1967, Pub. L. No. 90-148, § 108(c)(1), § 2, 81 Stat. 491, with Clean Air Act Amendments of 1970, Pub. L. No. 91-604, § 109(b)(1), § 4(a), 84 Stat. 1680.

117. *See* 42 U.S.C. § 7409(a)(1)(A) (requiring EPA Administrator to issue, within 30 days from the enactment of the 1970 amendments, primary and secondary NAAQS “for each air pollutant for which air quality criteria have been issued prior to such date”).

118. The 1970 Senate Report emphasized that “[c]oncern for health effects must extend beyond “normal” segments of the population to effects on the very young, the aged, the infirm, and other susceptible individuals.” S. REP. NO. 91-1196, at 7. More specifically, the Report stressed that NAAQS were to protect the health of sensitive subpopulations such as bronchial asthmatics and emphysematics. *Id.* at 10.

119. *See* Clean Air Act Amendments of 1977, Pub. L. 95-95, § 109(d)(1), § 106(a), 91 Stat. at 691.

120. § 109(d)(2), § 106(a), 91 Stat. at 691.

121. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, § 108, § 4(a), 84 Stat. 1678 (emphasis added).

anticipated to endanger public health or welfare.”¹²² This amendment followed directly from EPA’s experience in regulating airborne lead.¹²³

The current shape and content of the air quality criteria and standards are thus the products of not just one, but many, congressional decisions made over a period of decades. These congressional decisions, moreover, came in response to the executive’s own experience in implementing federal air pollution policy. In ways large and small, Congress has continually adjusted EPA’s course in implementing the Clean Air Act. Congress even passed legislation in response to the very standards at issue in *American Trucking*.¹²⁴ The tradition of dialogue and collaboration between Congress and the executive reflected in these decades of congressional and executive actions shows that the purpose of the nondelegation doctrine—to prevent Congress from forsaking its legislative role—is amply satisfied by the active congressional engagement that has given the Clean Air Act the form it has today.

III. QUANTITATIVE METASTANDARDS AND THE NONDELEGATION DOCTRINE

The Clean Air Act easily satisfies the Supreme Court’s existing requirements for assignments of authority from Congress to the executive. The D.C. Circuit, however, apparently thought that a reworking of these requirements was appropriate. Specifically, the court seems to have required—from Congress *or* EPA, it did not care which—*numerical*, or *quantitative*, guidance for the agency. This new requirement is evident in the court’s hints as to the kinds of guidance that would, in its view, be constitutionally satisfactory: cost-benefit analysis, “generic unit[s] of harm,” and quality-adjusted life-years. All of these approaches would make regulatory action turn on pre-existing, quantitative guidelines. Because the

122. Clean Air Act Amendments of 1977, Pub. L. No. 95-95, § 108(a)(1)(A), §401(a), 91 Stat. at 791 (emphasis added).

123. The House Report accompanying the 1977 amendments explained that the inclusion of the “may reasonably be anticipated” language was a direct response to *Ethyl Corp. v. EPA*, 541 F.2d 1 (D.C. Cir. 1976), *cert. denied*, 426 U.S. 941 (1976) (upholding EPA’s regulation of lead in gasoline), and was meant “to emphasize the preventive or precautionary nature of the act, i.e., to assure that regulatory action can effectively prevent harm before it occurs” and “to reflect awareness of the uncertainties and limitations in the data which will be available to the Administrator in the foreseeable future to enable him to execute his duties under this act.” H.R. REP. NO. 95-294, at 43-53 (1st Sess. 1977).

124. See Transportation Equity Act for the 21st Century, Pub. L. No. 105-178, §§ 6101-04, 112 Stat. 463-65 (1998). This legislation adjusted the deadlines for designating areas pursuant to the revised NAAQS, although it did not alter the standards themselves. §§ 6102(c)(1), 6102(d), 112 Stat. at 464-65 (adjusting deadlines for designations under new PM NAAQS); § 6103, 112 Stat. at 465 (adjusting deadlines for designations under ozone NAAQS); § 6104, 112 Stat. at 465 (stating that statute should not be construed to affect pending litigation or to ratify revised standards).

court of appeals found no numerical “cut-off point” for national air quality standards in either the Clean Air Act itself or EPA’s interpretation of it, it held that neither the statute nor EPA’s interpretation provided the “intelligible principle” that the Court has required of assignments of authority from Congress to the executive.¹²⁵ In so holding, the court revealed a deep misunderstanding of the nondelegation doctrine.

The Supreme Court has never required the kind of quantitative guidance from Congress (or from the agency itself) that the court of appeals seems to have required. Indeed, in the flood of delegation litigation inspired by the Court’s rulings in *Schechter* and *Panama Refining*, the Court addressed and rejected precisely this kind of claim. In a series of cases brought before the Court in the 1940s, regulated entities objected to giving *any* policymaking discretion to agencies at all, and the federal government responded in its briefs to the Court by denying, for example, that Congress was required to establish a “mathematical formula” for agency action.¹²⁶ The Court squarely rejected the claim that Congress must speak with mathematical precision:

It is not necessary that Congress supply administrative officials with a specific formula for their guidance in a field where flexibility and the adaptation of the congressional policy to infinitely variable conditions constitute the essence of the program.¹²⁷

The Court recognized that requiring such specificity from Congress would require forgoing the advantages of turning to an administrative agency in the first place:

[T]he effectiveness of both the legislative and administrative processes would become endangered if Congress were under the constitutional compulsion of filling in the details beyond the liberal prescription here. Then the burdens of minutiae would be apt to clog the administration of the law and deprive the agency of that flexibility and dispatch which are its salient virtues.¹²⁸

In recent years, the Court has had an opportunity to revisit its precedents upholding Congress’s power to assign responsibility to the executive under broad qualitative guidelines. In *Skinner*,¹²⁹ the Court faced a challenge to the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA).¹³⁰ COBRA directed the Secretary of Transportation to set pipeline safety user

125. *J.W. Hampton, Jr. & Co. v. United States*, 276 U.S. 394, 409 (1928); *A.L.A. Schechter Poultry Corp. v. United States*, 295 U.S. 495 (1935); *Panama Refining Co. v. Ryan*, 293 U.S. 388 (1935).

126. Brief for United States at 62, *Lichter*, 334 U.S. 742 (No. 99-1257).

127. *Lichter*, 334 U.S. at 785.

128. *Sunshine Anthracite Coal Co. v. Adkins*, 310 U.S. 381, 398 (1940).

129. *Skinner v. Mid-Am. Pipeline Co.*, 490 U.S. 212 (1989).

130. The Consolidated Omnibus Budget Reconciliation Act of 1985, Pub. L. 99-272, 100 Stat. 82 (1986).

fees that bore a “reasonable relationship” to volume-miles, miles, or revenues.¹³¹ In a unanimous opinion, the Court said that it had “no doubt” that COBRA’s restrictions on the Secretary’s discretion satisfied the requirements of the delegation doctrine,¹³² despite the fact that COBRA, like the Clean Air Act, uses qualitative guidelines to govern the establishment of quantitative fees.¹³³

The Court also had an opportunity to revisit the nondelegation doctrine in *Touby*.¹³⁴ *Touby* challenged Congress’s assignment of authority to the Attorney General to schedule controlled substances—and thus to criminalize their possession and distribution—on a temporary basis. A unanimous Court again had no trouble finding that the Controlled Substances Act’s standard of “imminent hazard to public safety”—which required consideration of a drug’s “history and current pattern of abuse,” the “scope, duration, and significance of abuse,” and “what, if any, risk there is to the public health”—was the kind of “intelligible principle” required by its delegation decisions.¹³⁵ The standard requiring an “imminent hazard to public safety” poses challenges for the Attorney General that are strikingly similar to those faced by EPA in setting the NAAQS. Nowhere in *Touby* did the Court suggest that the Controlled Substances Act was problematic because it did not supply quantitative limits for the Attorney General’s discretion.

Thus the Supreme Court has never required that congressional assignments of authority to the executive take a particular *form*, be it numerical or otherwise. Instead, the Court has long held that “so long as Congress provides an administrative agency with standards guiding its actions such that a court could ‘ascertain whether the will of Congress has been obeyed,’ no delegation of legislative authority trenching on the principle of separation of powers has occurred.”¹³⁶ Applying this well-settled rule, the Court has upheld numerous broad assignments of authority to the executive.¹³⁷ And, as noted, the Court

131. *Skinner*, 490 U.S. at 219.

132. *Id.* at 220.

133. Indeed, the only significant issue in that case was whether assignments of authority to the executive made pursuant to Congress’s taxing power should be scrutinized more strictly than other assignments have been; the answer to this question was no. *See id.* at 222-23.

134. *Touby v. United States*, 500 U.S. 160 (1991).

135. *Id.* at 166-67.

136. *Skinner*, 490 U.S. at 218 (citing *Mistretta v. United States*, 488 U.S. 361, 379 (1989)); *Yakus v. United States*, 321 U.S. 414, 426 (1944).

137. *See, e.g.*, *Nat’l Broad. Co. v. United States*, 319 U.S. 190, 225-26 (1943) (affirming Federal Communication Commission’s authority to regulate broadcast licensing in the “public interest”); *United States v. Southwestern Cable Co.*, 392 U.S. 157, 178 (1968) (upholding FCC’s authority to issue regulations “as public convenience, interest, or necessity requires”); *FPC v. Hope Natural Gas Co.*, 320 U.S. 591, 600 (1944) (upholding Federal Power Commission’s authority to determine “just and reasonable rates”).

has in recent years strongly reaffirmed Congress's authority to use broad guidelines in assigning authority to the executive.¹³⁸

The notion, embraced by the D.C. Circuit, that a congressional assignment of authority, or an agency's exercise of that authority, is constitutionally defective because it does not specify precise stopping points for regulation would require fundamental restructuring of much of modern government. A good deal of legislation takes precisely the same form that the court of appeals found unconstitutional: a qualitative directive to the agency—to set utility rates that are “just and “reasonable,”¹³⁹ to set pipeline fees based on a “reasonable relationship” to revenue and other factors,¹⁴⁰ or to regulate the height and width of bridges to prevent navigational obstructions,¹⁴¹ to name only a few examples—must be translated by an agency into a numerical rule. The Court has never invalidated this kind of legislation. In the context of air pollution control, as in many other regulatory settings, requiring a quantitative meta-standard from Congress (or from an agency) would effectively preclude much governmental action.

Given the dynamic nature of scientific inquiry and the multifarious issues that arise when regulating air pollutants that have very different effects, and mechanisms of effects, on human health and welfare, it would be quite impossible to devise in advance a catch-all, quantitative standard to govern all decisions setting NAAQS. The human health effects alone of air pollution—quite apart from the multitudinous effects on human welfare—vary widely, including such different effects as the initiation and aggravation of respiratory diseases including bronchitis¹⁴² and asthma,¹⁴³ impairment of the oxygen-carrying capacity of the blood,¹⁴⁴ reduced cognitive capacity,¹⁴⁵ and premature death.¹⁴⁶ Moreover, because air pollutants' harmful mechanisms vary, the technical issues that arise in identifying pollutants' consequences vary as well.¹⁴⁷ The court of appeals' fixation on the possibility that EPA could

138. See *Skinner*, 490 U.S. at 212; *Touby*, 500 U.S. at 160; *Loving v. United States*, 517 U.S. 748 (1996).

139. *Hope Natural Gas*, 320 U.S. at 600.

140. *Skinner*, 490 U.S. at 219.

141. *Union Bridge Co. v. United States*, 204 U.S. 364 (1907) (upholding against nondelegation challenge federal statute assigning authority to Secretary of War to regulate height and width of bridges over navigable waterways).

142. See 1971 NO_x Criteria Doc., *supra* note 99, at 11-8.

143. See 1970 Ozone Criteria Doc., *supra* note 85, at 10-7.

144. See 1970 CO Criteria Doc., *supra* note 85, at 10-3.

145. See EPA, AIR QUALITY CRITERIA FOR LEAD 13-6 (1977) [hereinafter 1977 Lead Criteria Doc.].

146. See 1967 SO_x Criteria Doc., *supra* note 73, at xxix.

147. See, e.g., 1977 Lead Criteria Doc., *supra* note 145, at 13-1 to 13-4 (discussing complexities of isolating effects of airborne lead exposure from other lead sources and identifying relationship between exposure levels and blood concentrations of lead); 1970 CO Criteria Doc.,

develop a “generic unit of harm” under the Clean Air Act revealed a complete lack of recognition of the multifarious nature of the harms created by air pollution. The court’s focus on “quality-adjusted life-years” (or “QALYs”) betrayed an even deeper misunderstanding: many of the harms prevented by air pollution regulation do not involve the premature mortality that is at the core of the “QALY” analysis the court embraced.

To require Congress (or, as the D.C. Circuit did, the agency) to foresee and address all of the subsidiary issues that arise in regulating air pollutants would be to prevent Congress from assigning authority to the executive at all in this context. The Supreme Court has never required such a degree of specificity from Congress as would effectively preclude congressional action on a particular problem. On the contrary, the Court has recognized that “[t]o burden Congress with all federal rulemaking would divert that branch from more pressing issues, and defeat the Framers’ design of a workable National Government.”¹⁴⁸ Indeed, it is fair to say that “a certain degree of discretion, and thus of lawmaking, *inheres* in most executive or judicial action”¹⁴⁹ The Court has always held, therefore, that Congress may “seek[] assistance, within proper limits, from its coordinate Branches Thus, Congress does not violate the Constitution merely because it legislates in broad terms, leaving a certain degree of discretion to executive or judicial actors.”¹⁵⁰ The court of appeals’ reworking of the nondelegation doctrine was, in essence, an effective but misguided means of achieving deregulation through the courts rather than Congress.

IV. THE NONDELEGATION DOCTRINE AND COST-BENEFIT ANALYSIS

Once the D.C. Circuit had held *both* that EPA’s current approach to setting the NAAQS violated the nondelegation doctrine *and* that EPA could not solve this problem by using cost-benefit analysis to set the NAAQS because prior circuit precedent forbade this approach,¹⁵¹ industry groups saw an opening to argue for a reinterpretation of the Act to incorporate the consideration of economic costs in setting the NAAQS. Thus, when parties supporting EPA’s PM and ozone rules petitioned for certiorari on the issue of delegation, industry groups conditionally cross-petitioned on the issue of the relevance of costs in setting the NAAQS, arguing that a ruling that required¹⁵² EPA to consider

supra note 85, at 10-3 to 10-4 (addressing relationship between carbon monoxide exposure levels and resulting levels of carboxyhemoglobin in blood).

148. *Loving*, 517 U.S. at 758.

149. *Mistretta*, 488 U.S. at 417 (Scalia, J., dissenting).

150. *Touby*, 500 U.S. at 165.

151. *Lead Industries Ass’n v. EPA*, 647 F.2d 1130 (D.C. Cir. 1980), *cert. denied*, 449 U.S. 1042 (1980).

152. Cross-petitioners American Trucking Ass’ns et al., suggested in their cross-petition that EPA was merely *permitted* to consider costs in setting the NAAQS. Brief of Am. Trucking

costs in setting the NAAQS would allow the Court to avoid the constitutional question of delegation.¹⁵³

At this point, however, most of the groups opposing EPA's new rules must have found themselves in a box. On the one hand, to be sure, the D.C. Circuit (in particular, Judge Williams) had suggested that cost-benefit balancing would solve the new nondelegation problem it had identified. A careful reading of the opinion preceding *American Trucking*, the *Lockout/Tagout I* case, shows that Judge Williams believed this because the kind of balancing he had in mind was formal cost-benefit analysis.¹⁵⁴ Industry groups, on the other hand, seemed most disinclined to argue to the Supreme Court that the Clean Air Act—which does not so much as mention economic costs in the crucial statutory passages—not only required some kind of cost-benefit balancing in setting the NAAQS, but required cost-benefit balancing of the most controversial kind: formal cost-benefit analysis, in which human lives and human illness are quantified and monetized. As I will explain, industry parties' understandable unwillingness to argue that formal cost-benefit analysis is required by the Clean Air Act meant that they were left embracing a vague, unspecified kind of balancing that did nothing to ameliorate the constitutional defect as they perceived it.

As set forth above, the D.C. Circuit created a new requirement in the name of the nondelegation doctrine—one that demands that guidance for administrative action prescribe a quantitative “stopping point” for regulation. The problem for the industry parties supporting the court of appeals' decision was that the various interpretations of the Clean Air Act they offered to the Supreme Court did not supply such a “stopping point.”¹⁵⁵ Nowhere in their many briefs to the Court did these parties and their amici identify exactly what the cost-benefit balancing they desired would entail. Indeed, they offered the

Ass'ns at 22, *Am. Trucking Ass'ns v. Browner*, 120 S. Ct. 2193 (2000) (No. 99-1426). In their briefs on the merits, however, they took the position that EPA was *required* to consider costs in this context. *Id.* at 32.

153. See Conditional Cross-Petition for Writ of Certiorari at 1, *Am. Trucking* (No. 99-1426).

154. In *Int'l Union, United Auto., Aerospace & Agric. Implement Workers of Am., UAW v. OSHA*, 938 F.2d 1310 (D.C. Cir. 1991) [hereinafter *Lockout/Tagout I*], the court suggested that OSHA could avoid the invalidation of the safety-related provisions of the OSHAct on nondelegation grounds by interpreting those provisions to allow cost-benefit analysis. *Id.* at 1316-21. Writing for the court, Judge Williams explained what he meant by cost-benefit analysis: “Cost-benefit analysis requires identifying values for lost years of human life and for suffering and other losses from non-fatal injuries.” *Id.* at 1320.

155. Cross-petitioners and their supporters could not even agree as to whether the Act *permits* or *requires* EPA to consider costs in setting the NAAQS. Compare Brief of Cross-petitioners *Am. Trucking Ass'ns* at 32, *Am. Trucking* (No. 99-1426) with Brief of Amici Curiae Senator James M. Inhofe in Support of Cross-Petitioners at 10, *Am. Trucking* (No. 99-1426). Cf. *Indus. Union Dept., AFL-CIO v. Am. Petroleum Inst.*, 448 U.S. 607, 672 (1980) [hereinafter *Benzene*] (Rehnquist, J., concurring).

Court a virtual smorgasbord of possibilities, ranging from analysis “under ‘significant risk’ and similar rubrics” to analysis based on “quality-adjusted life years” to the kind of cost-benefit analysis endorsed in *Lockout/Tagout I*,¹⁵⁶ which required “identifying values for lost years of human life and for suffering and other losses from non-fatal injuries.”¹⁵⁷

Quite apart from the administrative license created by this failure to choose among the multitudinous ways in which costs could be taken into account in setting regulatory standards, none of the proffered analytical frameworks, even viewed in isolation, identified the kind of stopping point for regulation that the D.C. Circuit required. An instruction from the Supreme Court telling EPA to consider quality-adjusted life years rather than lives lost, for example, would not have told EPA *how many* life years it should strive to save. It would, at most, have told the agency not to worry quite so much about the effects of air pollution on the elderly, the disabled, and the ill.

Industry parties’ argument that a simple directive to EPA to “consider[] costs and other countervailing factors,”¹⁵⁸ would somehow have provided determinate results was built upon the mistaken premise that cost-benefit balancing is a monolithic methodology. Balancing tests in health and safety regulation cover a vast territory. They include quite traditional “command-and-control” regulation, mandating the use of particular technologies;¹⁵⁹ regulation comparing the risks of not regulating with the risks of regulating;¹⁶⁰ open-ended balancing of a wide range of factors;¹⁶¹ and regulation based on formal cost-benefit analysis and consumer willingness to pay for reductions in health risks.¹⁶²

Thus, where Congress has called for balancing in standard-setting, it has chosen from a wide array of options and has tailored the balancing to fit the specific circumstances at hand. Congress’s failure to identify a specific kind of cost-benefit balancing in the NAAQS provisions of the Clean Air Act bolsters the conclusion that Congress simply did not permit such balancing to occur in setting the NAAQS. Moreover, industry parties’ own inability to identify the nature of the balancing they had in mind unraveled their argument that their reinterpretation of the Act would limit EPA’s discretion. Faced with their suggested directive—to “consider all logically relevant factors” in setting the

156. *Lockout/Tagout I*, 938 F.2d 1310 (D.C. Cir. 1991).

157. *Id.* at 1320.

158. See, e.g., Brief of Cross-petitioners Am. Trucking Ass’ns at 50, *Am. Trucking* (No. 99-1426).

159. See Clean Water Act, 33 U.S.C. § 1314(b)(1)(B) (2000).

160. See Food, Drug, and Cosmetic Act, 21 U.S.C. § 360c(a)(2) (2000); Food Quality Protection Act of 1996, 21 U.S.C. § 346a(b)(2)(B)(iii)(I)-(II)(2000).

161. See Toxic Substances Control Act, 15 U.S.C. § 2605(c)(1) (2000).

162. See Safe Drinking Water Act Amendments of 1996, 42 U.S.C. § 300g-1(b)(6)(A), (b)(3)(C)(iii) (1996).

NAAQS¹⁶³—EPA would have been free to do anything from setting technology-based, command-and-control-style regulations, to balancing risk against risk, to ceasing regulation at the point where the people hurt by air pollution were unwilling to pay the amount it would cost to prevent the pollution that hurt them. Clearly, it was not a limit on agency *discretion* that these parties were after; it was merely a limit on *regulation* that they desired.

Some industry groups even went so far as to argue that the Clean Air Act could not be constitutional so long as it precluded EPA from balancing “all logically relevant factors,” including costs, in setting the NAAQS.¹⁶⁴ Their constitutional argument thus amounted to this: section 109 of the Clean Air Act, as interpreted by the Environmental Protection Agency (EPA) for thirty years, effected an unconstitutional delegation of legislative power because it did not confer sufficient discretion on the agency. This was, to say the least, an unusual reworking of a constitutional doctrine designed to cabin rather than enlarge agency discretion. It would be most odd to mandate open-ended balancing by agencies in the name of the nondelegation doctrine.

Ironically, under these parties’ reworking of the nondelegation doctrine, Congress would find itself in more trouble, the more it attempted to constrain discretion by limiting the factors an agency may consider. On their theory, for example, section 7 of the Endangered Species Act,¹⁶⁵ must effect an unconstitutional delegation of legislative power because it requires federal agencies to shape their actions according to their effect on the continued existence of protected species, without regard to cost.¹⁶⁶ Similarly, if their approach were correct, then the Supreme Court *created* a constitutional problem when it interpreted the Occupational Safety and Health Act (OSHAct) to require the Occupational Safety and Health Administration (OSHA) to find a “significant risk” (without considering cost) before regulating workplace toxins.¹⁶⁷

In sum, not only would a good deal of federal legislation be open to the courts’ disapproval under the perspective that was offered by industry groups

163. Brief of Respondents Am. Trucking Ass’ns at 11, *Browner v. Am. Trucking Ass’ns*, 120 S. Ct. 2003 (No. 99-1257).

164. Brief of Respondents Am. Trucking Ass’ns at 11, *Browner v. Am. Trucking Ass’ns* (No. 99-1257). See also Brief for Respondents Appalachian Power Co. at 34, *Browner v. Am. Trucking Ass’ns* (No. 99-1257).

165. 16 U.S.C. § 1536.

166. *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 172-88 (1978).

167. *Benzene*, 448 U.S. at 639-40; see also *Am. Textile Mfrs. Inst., Inc. v. Donovan*, 452 U.S. 490, 505 n.25 (1981) (approving OSHA’s health-based method for finding significant health hazard). Like the Clean Air Act, the OSHAct requires the consideration of costs in determining exactly what requirements will be imposed on individual sources of risk. *Id.* at 508-09 (feasibility analysis required in setting workplace standards); Mass. & N.J. Brief at 24-28, *Am. Trucking* (No. 99-1426) (discussing manifold ways in which costs and feasibility relevant to decisions implementing the NAAQS).

opposing EPA's PM and ozone rules, but it would be open to such disapproval on the ground that it *confined* agency discretion through limitations on the factors agencies could consider.

Even formal cost-benefit analysis, however, would not have solved the constitutional problem as the D.C. Circuit and the industry groups opposing EPA's new rules saw it. As Judge Williams explained for the court in *Lockout/Tagout I*, "Cost-benefit analysis requires identifying values for lost years of human life and for suffering and other losses from non-fatal injuries."¹⁶⁸ What the D.C. Circuit failed to appreciate is that the potential "range of values" for human life and human suffering is vast, perhaps even infinite, even when these values are determined by considering individuals' willingness to bargain for risk-related benefits.¹⁶⁹ Sometimes, for example, people simply refuse to participate in markets for risks to human life; in one study, researchers found that the majority of parents asked how steep a price discount they would require to accept riskier household products responded that they would not buy the products at all.¹⁷⁰ Other researchers have found, in contrast, that some workers receive no extra wage for riskier work; such results imply that, in some cases, enhanced risk has *zero* value in the marketplace.¹⁷¹ "Willingness to pay" values for human life thus might plausibly range from zero to priceless. The bare requirement of cost-benefit analysis thus arguably *enlarges* rather than constricts the range of permissible agency responses to matters of life and death.

Cost-benefit analysis is, moreover, in considerable tension with the public-health-regarding goals of the Clean Air Act. Because of the proclivity of cost-benefit analysis for quantification and commensuration, cost-benefit analysis tends to highlight those costs and benefits that can be both quantified and stated in terms of a common metric, such as dollars. It follows that cost-benefit analysis tends to underrate those things that cannot be so quantified and monetized; it tends, in Professor Tribe's famous formulation, to "dwarf[] soft variables."¹⁷²

This feature of cost-benefit analysis makes it a particularly unhelpful analytical framework for setting air quality standards under the Clean Air Act.

168. *Lockout/Tagout I*, 938 F.2d at 1320.

169. In a concurrence to his own panel opinion, Judge Williams further elaborated on the process of setting a "numerical value on human life," noting that "[p]reference-based techniques are a commonly used approach, but are subject to such pitfalls as wealth bias, age bias and inconsistency." *Lockout/Tagout I*, 938 F.2d at 1326 & n.1 (citation omitted).

170. See W. Kip Viscusi, Wesley A. Magat, & Joel Huber, *An Investigation of the Rationality of Consumer Valuations of Multiple Health Risks*, 18 RAND J. ECON. 476, 477 (1987).

171. See Julie Graham, Don M. Shakow, & Christopher Cyr, *Risk Compensation—In Theory and Practice*, 25 ENV'T. 14, 19-20 (1983).

172. Laurence H. Tribe, *Ways Not to Think About Plastic Trees: New Foundations for Environmental Law*, 83 YALE L.J. 1315, 1318-19 & n.25 (1974).

While a retrospective cost-benefit analysis may, like that done with respect to the Clean Air Act, demonstrate the wisdom of policy choices decades after those choices were made, a prospective cost-benefit analysis might have discouraged a policymaker from making those very same choices in the first instance. As explained below, prospective cost-benefit analysis would tend to have the following effect: it would tend to overestimate costs (because it could not adequately account for technological innovation) and underestimate benefits (because so many important things cannot be counted). The result would likely be a systematic tendency toward underprotection of the health and welfare central to the Act.

On the cost side, for example, it is very difficult accurately to estimate the consequences of a *technology-forcing* regulatory requirement before that requirement has forced any technology. It is much easier to assume that the technology used to implement the new requirement will be the same as, and cost as much as, the technology that existed before the requirement was imposed. And indeed, this is the approach taken by EPA when it has, as it is obliged to do by Executive Order, tried to estimate the costs of the NAAQS. With respect to the rules at issue here, EPA thought its cost estimates would prove to be significantly overstated because of the likely effects of technological innovations.¹⁷³ But the agency could not quantify these effects, and so they do not show up in its economic analysis.

Likewise, with respect to benefits, the empirical and normative complexity of quantifying and monetizing the benefits of good health, long life, and fresh air are well known. When these benefits cannot be quantified or monetized, they do not amount to much in cost-benefit analysis.¹⁷⁴ Even when they can be both quantified and monetized, an important normative shift occurs when the analyst begins to ask not how clean must the air be to protect public health but how much would citizens pay to make it so.¹⁷⁵

In short, then, even formal cost-benefit analysis would not have succeeded in satisfying the D.C. Circuit's new requirement of a precise stopping point for regulation. It almost certainly would have succeeded, however, in undermining health and environmental protection under the Clean Air Act.

173. See Office of Air Quality Planning and Standards, Environmental Protection Agency, Regulatory Impact Analyses for the Particulate Matter and Ozone NAAQS and Proposed Regional Haze Rule at 9-2 to 9-4 (1997).

174. See, e.g., *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201, 1219 (5th Cir. 1991) (dismissing importance of unquantified benefits of banning asbestos in course of disapproving EPA's cost-benefit analysis of the ban).

175. Cf. Tribe, *supra* note 172, at 1329-32.

CONCLUSION

The D.C. Circuit's opinion in *American Trucking* was a law professor's dream: brimming with complex legal issues and high-stakes public policy disputes, and culminating in the revival and reworking of a moribund constitutional doctrine, the case could have kept students of administrative law, environmental law, and regulatory policy gainfully employed for many years. I have only touched here on only one of the many issues presented in the case, and that is the question whether the Clean Air Act violates the nondelegation doctrine. I think it is clear that it does not, and the Supreme Court has unanimously agreed.

